

1 **Amendment to the Claims**

2 **In the Claims:**

3 Please amend Claims 1-3, 5-7, 9-13, 16, 23, 25, and 71 as follows:

4 1. (Currently Amended) A modular system for producing a ~~desired~~ chemical product from a
5 plurality of reactants comprising:

6 (a) a control module, said control module being adapted to monitor and control
7 production of the ~~desired~~ chemical product by the modular system, said control module comprising a
8 processor, a reaction database, and a user interface, the control module being configured to enable a
9 user to interact with the user interface to select a specific reaction to produce the chemical product,
10 from a plurality of different reactions stored in the reaction database, so that in response to a selection
11 made by a user, the processor automatically controls the modular system to produce the chemical
12 product according to reaction parameters for the specific reaction that was selected, said reaction
13 parameters being stored in the reaction database;

14 (b) a reactant supply source for each of said plurality of reactants, a flow of each
15 reactant from its reactant supply source being controlled by the control module; and

16 (c) a first reaction module in fluid communication with each reactant supply
17 source to receive each of the plurality of reactants, said first reaction module being controllably
18 connected to said control module and including a ~~replaceable~~ reactor, said ~~replaceable~~ reactor
19 automatically producing the ~~desired~~ chemical product from said plurality of reactants under the
20 control of the control module.

21 2. (Currently Amended) The modular system of Claim 1, wherein said ~~replaceable~~ reactor is
22 replaceable, and comprises a mixing volume and a reaction volume.

23 3. (Currently Amended) The modular system of Claim 1, wherein at least one of said
24 ~~plurality of reactants~~ reactant supply source and said first reaction module are configured to
25 accommodate a reactant that is in a gaseous state.

26 4. (Original) The modular system of Claim 1, further comprising a pump module
27 controllably connected to the control module, said pump module being in fluid communication with
28 each reactant supply source and with said first reaction module, the pump module pumping at least
29 one fluid through the modular system.

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1 5. (Currently Amended) The modular system of Claim 1, further comprising an additional
2 processing module in fluid communication with said first reaction module, said additional processing
3 module being disposed downstream of said reactor, such that the chemical product produced in the
4 reactor passes through said additional processing module.

5 6. (Currently Amended) The modular system of Claim 5, wherein said additional processing
6 module comprises a residence time module in which reaction of the ~~desired~~ chemical product
7 continues toward completion for a predetermined amount of time.

8 7. (Currently Amended) The modular system of Claim 6, wherein said residence time
9 module comprises a capillary passage of a length selected to obtain the predetermined amount of time
10 for said ~~desired~~ chemical product in said residence time module.

11 8. (Original) The modular system of Claim 6, wherein said residence time module comprises
12 a proportional valve, said proportional valve being controllably connected to said control module to
13 selectively vary a pressure within said modular system.

14 9. (Currently Amended) The modular system of Claim 5, wherein said additional processing
15 module comprises a second reaction module in fluid communication with said first reaction module,
16 such that a serial fluid path is created with respect to said first reaction module, said ~~additional~~
17 second reaction module being controllably connected to said control module and including a
18 ~~replaceable~~ reactor that produces the ~~desired~~ chemical product from a reaction of said plurality of
19 reactants, ~~so that said modular system produces said desired chemical product using a plurality of~~
20 synthesis steps, a first synthesis step being completed in said first reaction module, and a second
21 synthesis step being completed in said ~~additional~~ second reaction module.

22 10. (Currently Amended) The modular system of Claim 9, further comprising sufficient
23 additional processing reaction modules, each additional processing module including a reaction
24 module, so that production of the ~~desired~~ chemical product can be achieved using additional synthesis
25 steps that are completed in succession, each additional synthesis step being completed in ~~an~~ a
26 different one of the additional reaction-module processing modules, the reaction module in each
27 additional processing module being configured to receive a product from a previous additional
28 processing module in which an immediately preceding synthesis step was completed.

29 11. (Currently Amended) The modular system of Claim 1, wherein said ~~replaceable~~ reactor
30 is specifically configured to enable it to produce a class of chemical products, and is selectively

1 readily removable from said first reaction module and replacable with a different ~~replacable~~ reactor
2 configured to facilitate the production of a different class of chemical products, thus enabling said
3 modular system to selectively produce different classes of chemical products.

4 12. (Currently Amended) The modular system of Claim 5, wherein said first reaction module
5 further includes a housing, said housing comprising:

6 (a) a first side that includes a plurality of ports enabling said first reaction module
7 to be removably connected to said control module and in fluid communication with said each reactant
8 supply;

9 (b) a second side that includes a plurality of ports enabling said first reaction
10 module to be in fluid communication with at least one of the additional processing module and a
11 product reservoir; and

12 (c) a mounting frame for said ~~replacable~~ reactor.

13 13. (Currently Amended) The modular system of Claim 1, wherein said first reaction module
14 comprises means for facilitating production of said ~~desired~~ chemical product.

15 14. (Original) The modular system of Claim 13, wherein said means include at least one of a
16 heat exchanger, a temperature sensor, and a reactant laminar flow mixing passage.

17 15. (Cancelled)

18 16. (Currently Amended) The modular system of Claim 1, wherein said modular system further
19 comprises a plurality of fluid paths, including a fluid path for each of said plurality of reactants, a fluid
20 path for said ~~desired~~ chemical product, at least one fluid path for a heat transfer media, and at least one
21 fluid path for a spent heat transfer media.

22 17. (Original) The modular system of Claim 1, wherein said at least one fluid path for said
23 heat transfer media and said at least one fluid path for said spent heat transfer media are configured in
24 one of a parallel fluidic system and a serial fluidic system.

25 18. (Original) The modular system of Claim 4, wherein said pump module comprises at least
26 one pump, said at least one pump being controllably connected to said control module to control its
27 operation.

28 19. (Original) The modular system of Claim 18, wherein said at least one pump is in fluid
29 communication with both a heat transfer media fluid supply and said first reaction module.

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1 20. (Original) The modular system of Claim 18, wherein said at least one pump is in fluid
2 communication with both the reactant supply source for at least one of said plurality of reactants, and
3 said first reaction module.

4 21. (Original) The modular system of Claim 4, wherein said pump module comprises a separate
5 pump for each of said plurality of reactants, each separate pump being in fluid communication with the
6 reactant supply for a different one of said plurality of reactants, and with said first reaction module.

7 22. (Original) The modular system of Claim 4, wherein said pump module comprises at least
8 one valve, said at least one valve being controllably connected to said control module to control a
9 flow of one of said plurality of reactants to said first reaction module.

10 23. (Currently Amended) The modular system of Claim 4, wherein said pump module
11 comprises at least one filter that ~~removes undesired material from~~ filters one of said plurality of
12 reactants before the reactant flows to said first reaction module.

13 24. (Original) The modular system of Claim 4, wherein said pump module comprises a
14 housing, said housing comprising:

15 (a) a first side that includes a plurality of ports enabling said pump module to be
16 controllably connected to said control module, and to be in fluid communication with each reactant
17 supply source; and

18 (b) a second side that includes a plurality of ports enabling said pump module to
19 be in fluid communication with said first reaction module.

20 25. (Currently Amended) The modular system of Claim 4, wherein a quantity of said ~~desired~~
21 chemical product produced by the modular system is increasable by at least one of:

22 (a) replacing said pump module with a different pump module having an increased
23 flow rate;

24 (b) replacing said ~~replaceable~~ reactor in said first reaction module with a different
25 ~~replaceable~~ reactor that is configured to provide an increased rate of production of the ~~desired~~
26 chemical product; and

27 (c) replacing said first reaction module with a different reaction module that is
28 configured to provide an increased rate of production.

29 26. (Original) The modular system of Claim 4, wherein all connections between modules are
30 achieved using quick connect connectors that enable rapid connection and disconnection of the modules.

1 Claims 27 - 70 (Cancelled)

2 71. (Currently Amended) A modular system for producing a ~~desired~~ chemical product from
3 at least one reactant, comprising:

4 (a) a control module, said control module being adapted to monitor and control
5 production of the ~~desired~~ chemical product by the modular system, said control module comprising a
6 processor, a reaction database, and a user interface, the control module being configured to enable a
7 user to interact with the user interface to select a specific reaction from a plurality of different
8 reactions stored in the reaction database, so that in response to a selection made by a user, the
9 processor automatically controls the modular system to produce the chemical product according to
10 reaction parameters for the specific reaction selected that was selected, said reaction parameters being
11 stored in the reaction database;

12 (b) a reactant supply source for each reactant used, a flow of each reactant used
13 from its reactant supply source being controlled by the control module; and

14 (c) a first reaction module in fluid communication with at least one reactant supply
15 source to receive said at least one reactant, said first reaction module being controllably connected to
16 said control module and including a replaceable reactor, said replaceable reactor automatically
17 producing the ~~desired~~ chemical product from said at least one reactant under the control of the control
18 module.

19 (Please add new Claims 72-74 as follows:)

20 72. (New) The modular system of Claim 71, wherein said replaceable reactor comprises a
21 microreactor.

22 73. (New) The modular system of Claim 72, wherein said microreactor comprises a mixing
23 volume and a reaction volume.

24 74. (New) The modular system of Claim 1, wherein said reactor comprises a microreactor.

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